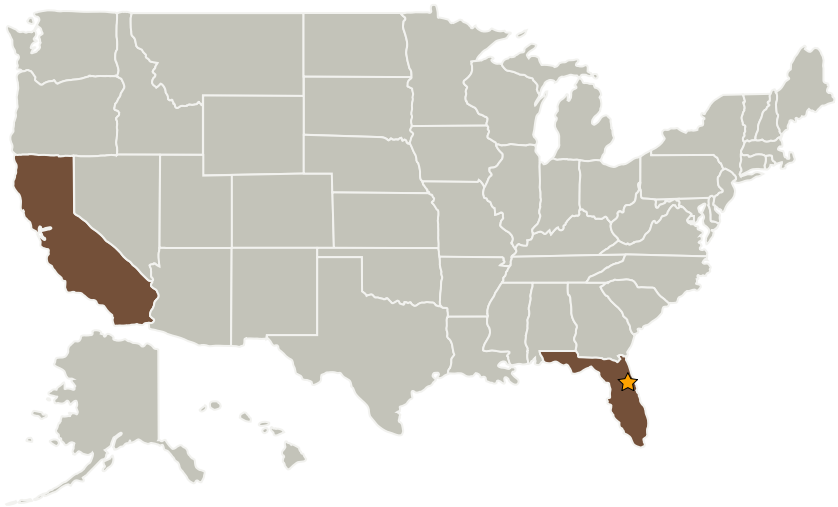
Spectral Imaging Visualization and Tracking System, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

To address the NASA Earth Observation Mission need for innovative optical tracking systems, Physical Optics Corporation (POC) proposes to develop a new Spectral Imaging Visualization And Tracking (SPIVAT) system, based on hyperspectral/multispectral imaging with enhanced image contrast for optimized target visualization and tracking in day and night under all weather conditions. This approach incorporates the first-time use of spectral image fusion for enhanced real-time target detection and a unique video tracking using a simple common-aperture imaging optics design to avoid the image registration problem of separate aperture systems. This innovative combination enables us to meet NASA requirements for reliability, safety, and affordability by using COTS components with real-time tracking algorithms. The system offers high-contrast visualization and real-time target tracking using ground UAV or balloon platforms for NASA vehicle launch and landing operations. In Phase I POC will demonstrate the feasibility of the SPIVAT system device by computer simulation and preliminary laboratory experiments, which will demonstrate TRL-level 4 by the end of Phase I. In Phase II POC plans to develop a fully functional prototype and demonstrate hyperspectral/multispectral imaging visualization and tracking capability for NASA vehicle launch and landing operations.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations	
California	Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Yunlu Zou

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.1 Guidance and Targeting Algorithms
    - TX17.1.2 Targeting Algorithms